## **Listing of Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application.

1-27. (Cancelled)

- 28. (New) A method of utilizing a triggerably releasable delivery system in the treatment of a patient, the method comprising administering to the patient a plurality of nanoparticles containing alumina and having a size of about 500 nanometers or less, wherein the nanoparticles are bonded to a functional compound and possess a zeta potential of about 20 millivolts or more, wherein the functional compound is released from the surface of the nanoparticles upon exposure to an environmental or chemical condition.
- 29. (New) The method of claim 28, wherein the nanoparticles include silica coated with alumina.
- 30. (New) The method of claim 28, wherein the nanoparticles posses a zeta potential of about 30 millivolts or more.
- 31. (New) The method of claim 28, wherein the nanoparticles posses a zeta potential of about 40 millivolts or more.
- 32. (New) The method of claim 28, wherein the functional compound is adsorbed onto a surface of the nanoparticles.
- 33. (New) The method of claim 28, wherein the functional compound is an antimicrobial agent, anti-viral agent, or a combination thereof.
- 34. (New) The method of claim 28, wherein the functional compound is a therapeutic agent.

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35. (New) The method of claim 28, wherein the functional compound contains a moiety comprising:

or a tautomer thereof, or a functional equivalent thereof, wherein R and R' comprise independently hydrogen, an alkyl group, or an aryl group.

- 36. (New) The method of claim 28, wherein the nanoparticles are contained within a vehicle.
  - 37. (New) The method of claim 36, wherein the vehicle is a liquid.
  - 38. (New) The method of claim 36, wherein the vehicle is a gel.
- 39. (New) The method of claim 36, wherein the vehicle includes a pH altering material.
- 40. (New) The method of claim 28, wherein the nanoparticles are located on a substrate prior to administration to the patient.
- 41. (New) The method of claim 28, wherein the environmental or chemical condition includes a change in pH.
- 42. (New) The method of claim 41, wherein the change in pH involves a change from an acidic to an alkaline pH.
- 43. (New) The method of claim 41, wherein the change in pH involves a change from an alkaline to an acidic pH.

- 44. (New) The method of claim 28, wherein the nanoparticles are topically administered to the skin of the patient.
- 45. (New) The method of claim 28, wherein the nanoparticles are administered to a mucosal membrane of the patient.
- 46. (New) The method of claim 45, wherein the mucosal membrane is located in the vagina of a female.
- 47. (New) A method of utilizing a triggerably releasable delivery system in the treatment of a patient, the method comprising administering a vehicle to a mucosal membrane of a patient, the vehicle comprising a plurality of nanoparticles containing alumina and having a size of about 500 nanometers or less, wherein the nanoparticles are bonded to a functional compound and possess a zeta potential of about 20 millivolts or more, and wherein the functional compound is released from the surface of the nanoparticles by a change in pH.
- 48. (New) The method of claim 47, wherein the nanoparticles contain silica coated with alumina.
- 49. (New) The method of claim 47, wherein the nanoparticles posses a zeta potential of about 30 millivolts or more.
- 50. (New) The method of claim 47, wherein the nanoparticles posses a zeta potential of about 40 millivolts or more.
- 51. (New) The method of claim 47, wherein the functional compound is adsorbed onto a surface of the nanoparticles.
- 52. (New) The method of claim 47, wherein the functional compound is an antimicrobial agent, anti-viral agent, or a combination thereof.

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- 53. (New) The method of claim 47, wherein the functional compound is a therapeutic agent.
- 54. (New) The method of claim 47, wherein the functional compound contains a moiety comprising:

or a tautomer thereof, or a functional equivalent thereof, wherein R and R' comprise independently hydrogen, an alkyl group, or an aryl group.

- 55. (New) The method of claim 47, wherein the vehicle is a liquid.
- 56. (New) The method of claim 47, wherein the vehicle is a gel.
- 57. (New) The method of claim 47, wherein the vehicle includes a pH altering material.
- 58. (New) The method of claim 47, wherein the nanoparticles are located on substrate prior to administration to the patient.
- 59. (New) The method of claim 47, wherein the change in pH involves a change from an acidic to an alkaline pH.
- 60. (New) The method of claim 47, wherein the change in pH involves a change from an alkaline to an acidic pH.
- 61. (New) The method of claim 47, wherein the mucosal membrane is located in the vagina of a female.